

FIG. 1

PRIOR ART

FIG. 1

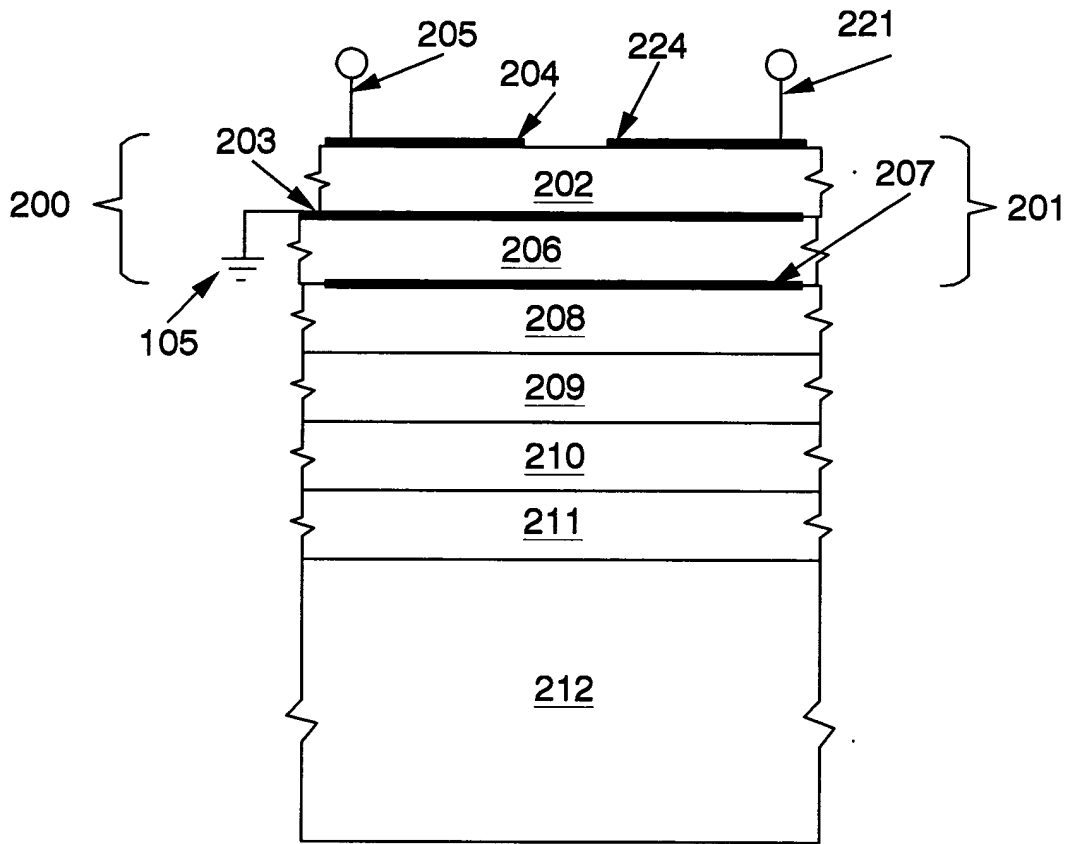


FIG. 2

PRIOR ART

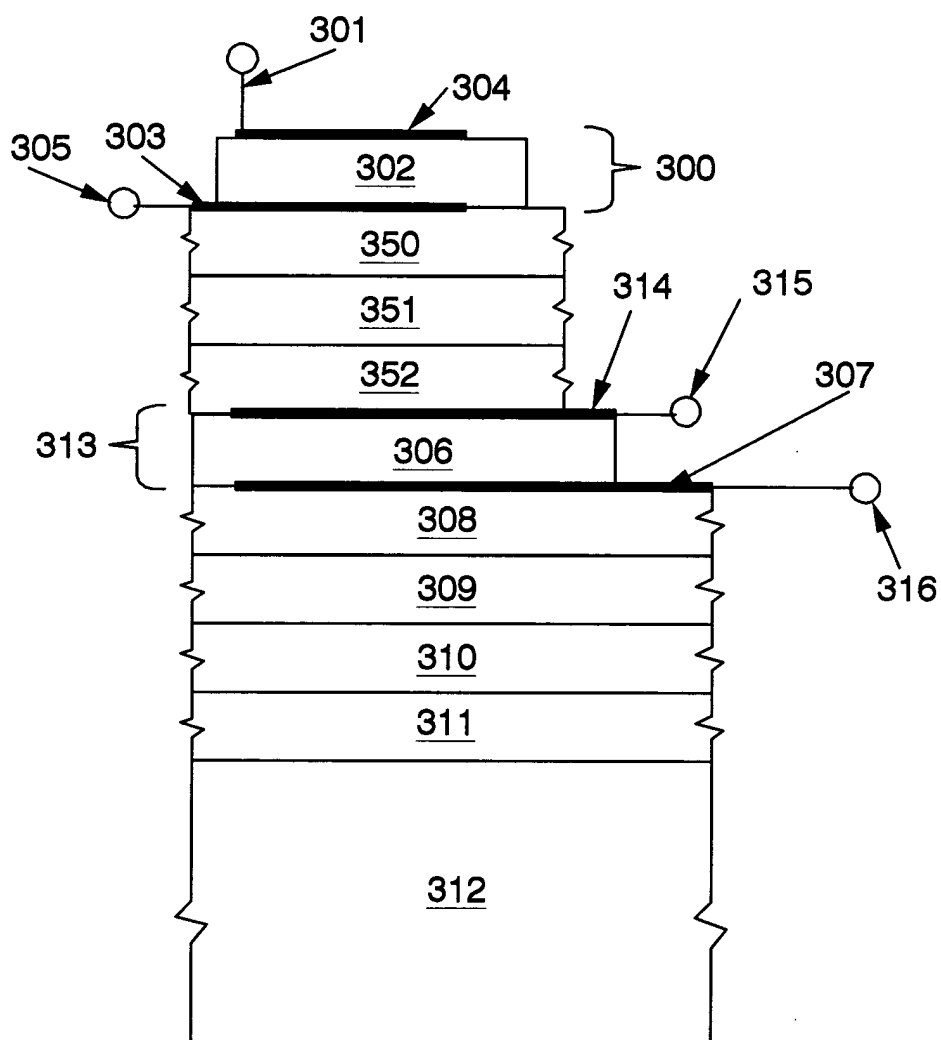


FIG. 3

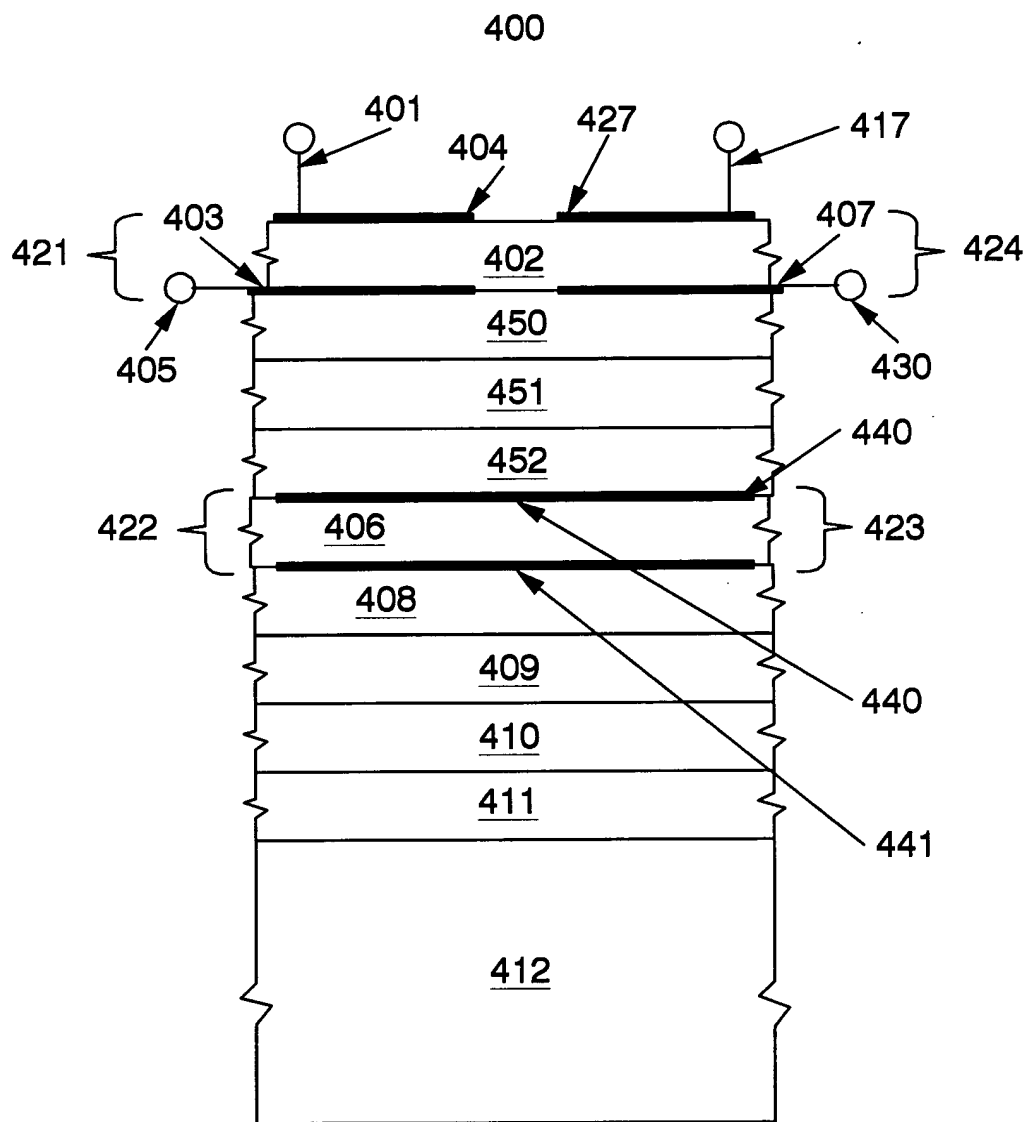


FIG. 4

FIG. 5

FIG. 6

FIG. 7

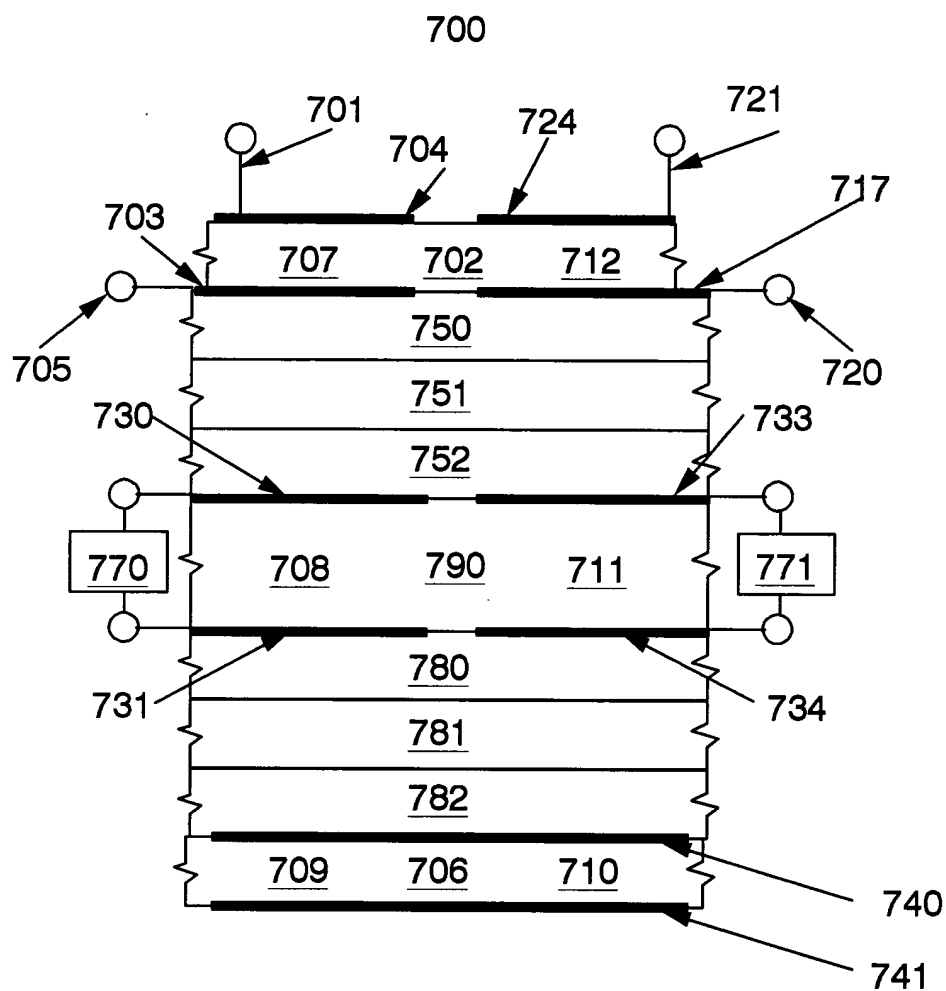


FIG. 7

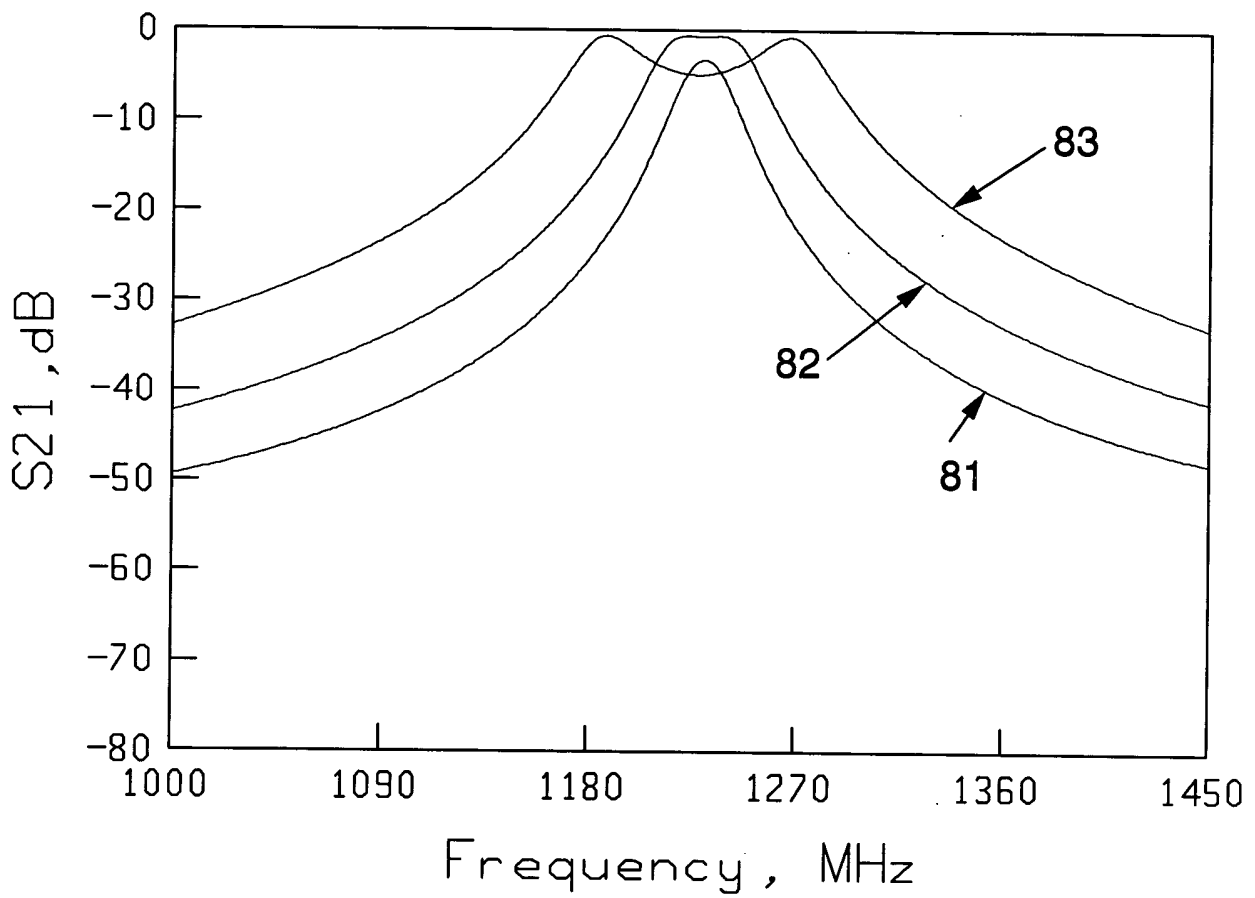


FIG. 8

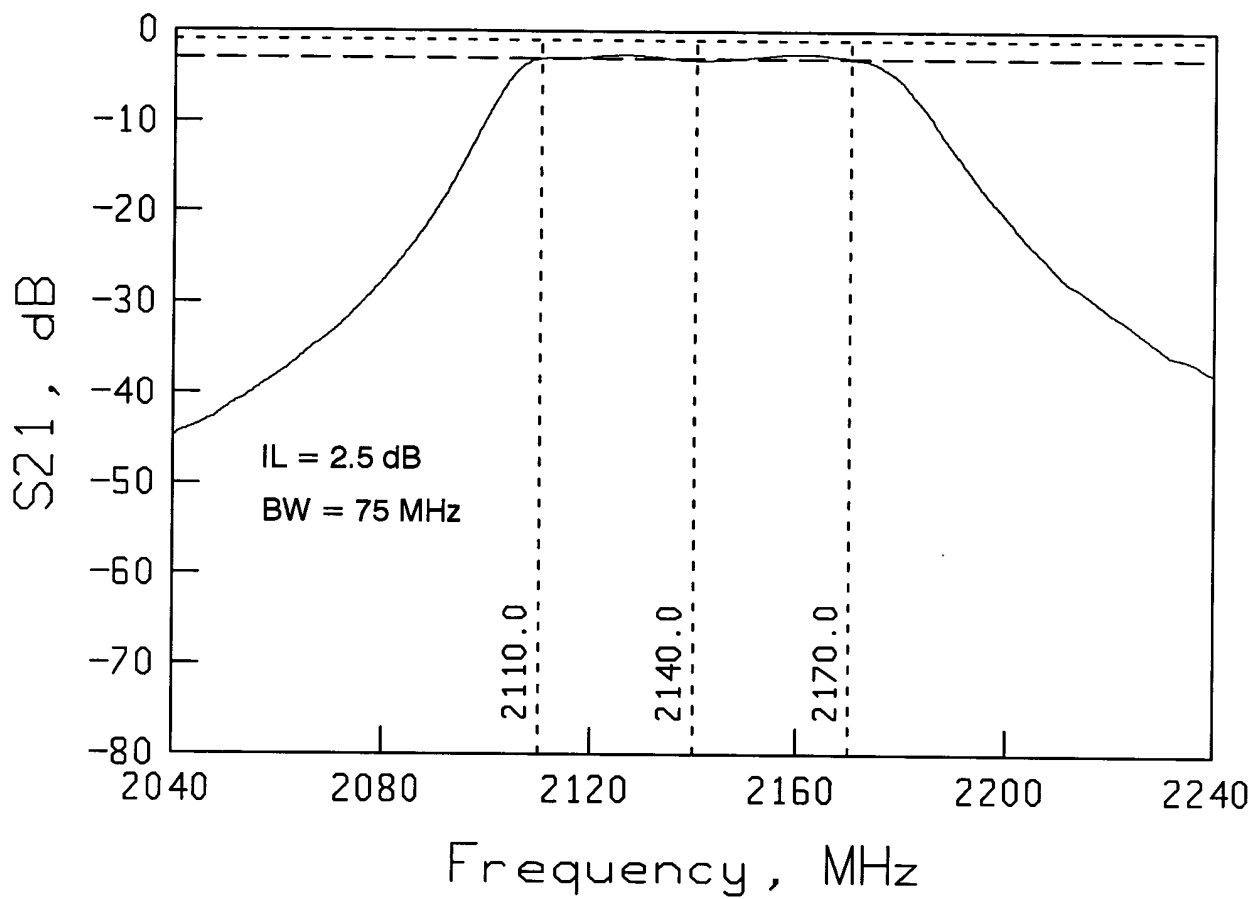


FIG. 9

10311-260660

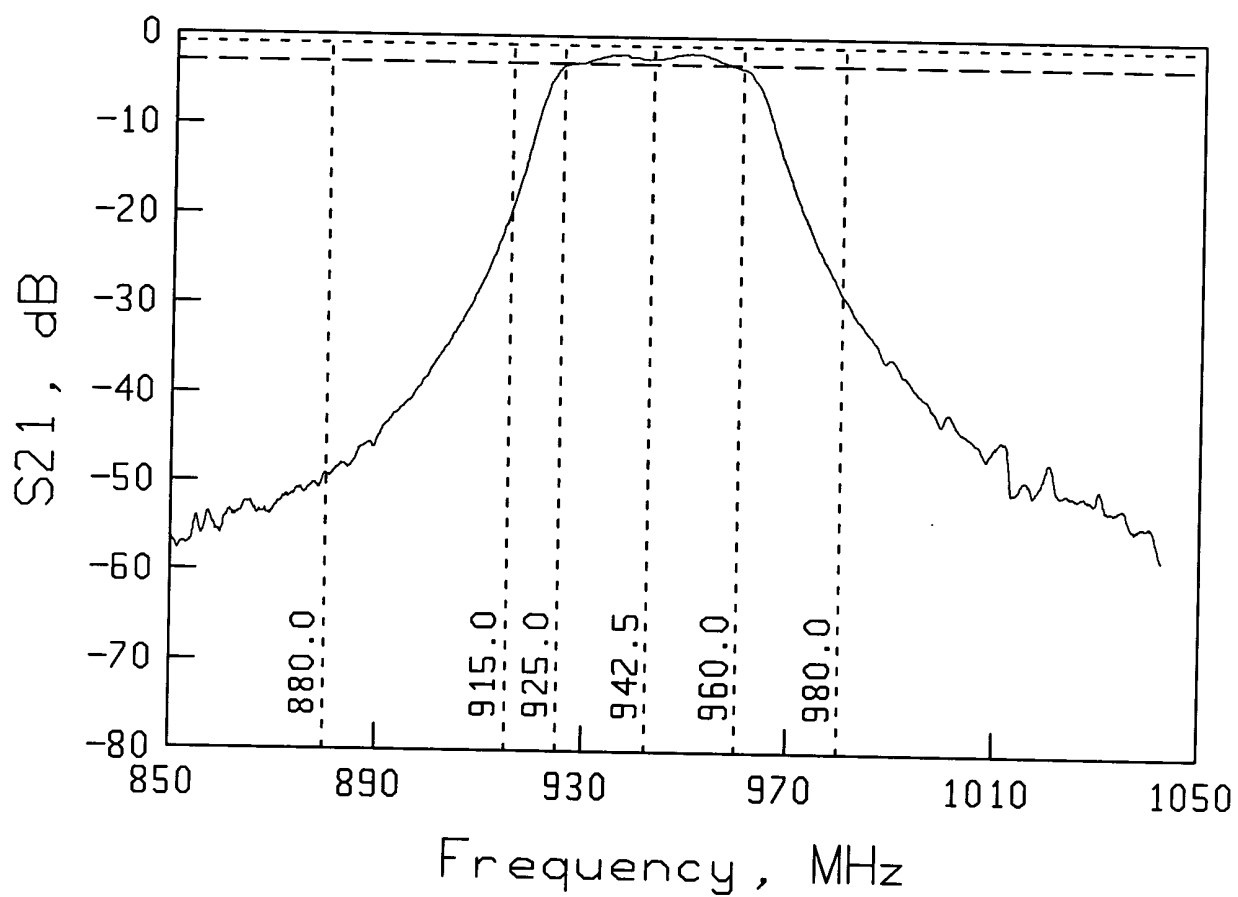


FIG. 10

FOUO 1200000

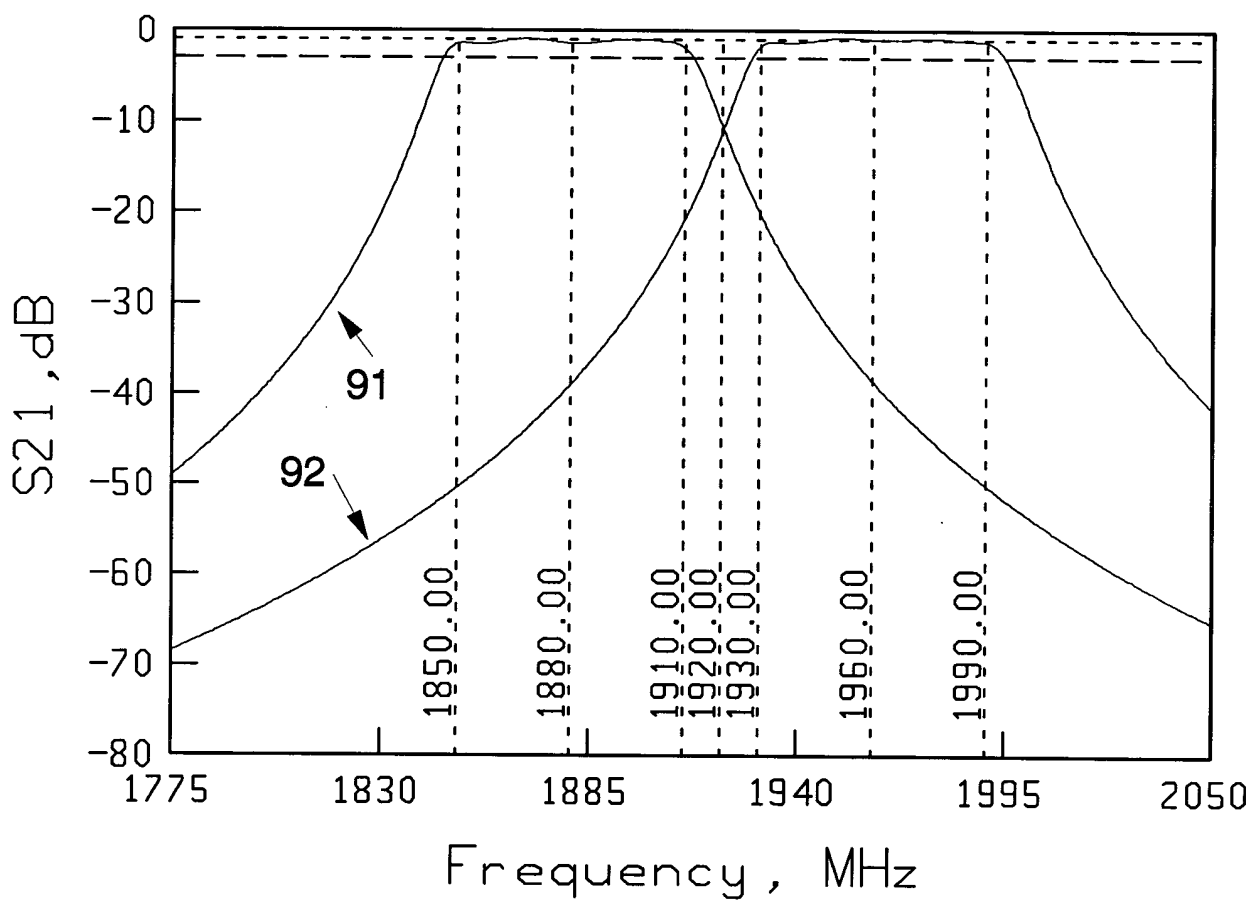


FIG. 11

TABLE OF MATERIAL VALUES

Layer (a)	Impedance(b)	Material	Fig. 9 Thick. (c)	Fig. 10 Thick. (c)	Fig. 11 (h) Thick. (c)	Fig. 11 (i) Thick. (c)
404/424	17.3	Al	0.22	0.52	0.28	0.21
402	36.8	AlN	2.22	5.0	2.47	
403/407	17.3	Al	0.22	0.52	0.295	0.205
450	12.7	SiO2	0.69	1.56	0.766	
451	32.7	AlN (d)	1.28	2.9	1.425	
452	4.06	LDO (e)	0.34	0.77	0.377	
440	17.3	Al	0.22	0.52	0.295	0.205
406	36.8	AlN	2.22	5.0	2.47	
441	17.3	Al	0.22	0.52	0.295	0.205
408	12.7	SiO2	0.69	0.77 (g)	0.766	
409 (f)	32.7	AlN (d)	1.28	2.9	1.425	
410	12.7	SiO2	0.69	1.56	0.766	

Notes:

(a) Refer to Fig. 4 and Fig. 6 for layer designations

(b) Mechanical impedance in units of $(1E5\text{cm/sec})(\text{gm/cm}^3)$

(c) Layer thickness in units of micrometers

Reflector and coupler layers are quarter wavelength thick at center frequency.

For Fig. 11, the quarter wavelength frequency is 1920 MHz.

(d) Polycrystalline form of AlN, non-piezoelectric

(e) Low density oxide used as low dielectric constant isolation layers in microelectronics.

(f) From 409 to the substrate are eight quarter wavelength thick layers in the 409/410 materials sequence.

(g) LDO material in this layer

(h) For filter 91

(i) For filter 92 showing only values changed from those for filter 91.

Fig. 12